

WHITE SANDS SPACE HARBOR AREA 1,
TACAN BEACON STATION

HAER No. NM-28-S

(Space Shuttle landing Facility Area 1, TACAN Beacon Station)

White Sands Missile Range

Approximately 2,350' northeast of HUB Maintenance Facility along
access road

White Sands vicinity

Doña Ana County

New Mexico

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
U.S. Department of the Interior
Intermountain Regional Office
12795 Alameda Parkway
Denver, CO 80225-0287

HISTORIC AMERICAN ENGINEERING RECORD

WHITE SANDS SPACE HARBOR AREA 1, TACAN BEACON STATION
(Space Shuttle landing Facility Area 1, TACAN Beacon Station)

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Location: White Sands Missile Range
Approximately 2,350' northeast of HUB Maintenance
Facility along access road
White Sands vicinity
Doña Ana County
New Mexico

U.S.G.S. 7.5 Minute Las Cruces, New Mexico,
Quadrangle, Universal Transverse Mercator Coordinates
(center of runways): E 32.944408 N 106.41993 Zone 13S,
NAD 1983

Construction: ca.1988

Architect: Not known

Builder: Not known

Present Owner: Commander, U.S. Army White Sands Missile Range,
New Mexico 88002-5018

Present Use: Vacant

Significance: The Tactical Air Navigation (TACAN) Beacon Station was
an essential component of the White Sands Space Harbor
(WSSH) from 1988-2011. It is considered to have
national significance and is eligible for listing in
the National Register of Historic Places (NRHP) under
Criterion A for its association with the NASA Space
Shuttle Program (SSP) with a period of significance of
1976-2011. Because it achieved significance within
the past fifty years, Criterion Consideration G also
applies.

Report

Prepared by: Robbie D. Jones, Senior Historian
New South Associates
118 South 11th Street
Nashville, TN 37206

Date: September 2013

LIST OF ACRONYMS

| | |
|---------|----------------------------------------------------|
| ABGR | Alamogordo Bombing and Gunnery Range |
| ABS | Anti-lock Braking System |
| ACHP | Advisory Council on Historic Preservation |
| ACI | Archaeological Consultants, Inc. |
| AIAA | American Institute of Aeronautics and Astronautics |
| APE | Area of Potential Effects |
| ATC | Air Traffic Control |
| BTT | Basic Training Target |
| CCC | Civilian Conservation Corps |
| CIT | California Institute of Technology |
| CONEX | Container Express |
| DC-X | Delta Clipper, Experimental |
| DoD | Department of Defense |
| GPS | Global Positioning System |
| HAFB | Holloman Air Force Base |
| HPO | Historic Preservation Officer |
| HPWG | Historic Preservation Working Group |
| HUB | Harbor Utility Building |
| IGS | Inter Glide Slope |
| IHA | InoMedic Health Applications, LLC |
| JSC | Johnson Space Center |
| KSC | Kennedy Space Center |
| LC | Launch Complex |
| MD | McDonnell Douglas |
| MSBLS | Microwave Scanning Beam Landing System |
| MSFC | Marshall Space Flight Center |
| NASA | National Aeronautics and Space Administration |
| NAVAIDS | Navigational Aids |
| NEPA | National Environmental Policy Act |
| NHL | National Historic Landmark |
| NHPA | National Historic Preservation Act |

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| | |
|-------|------------------------------------------------|
| NPS | National Park Service |
| NRHP | National Register of Historic Places |
| NSA | New South Associates |
| OCC | Operations Control Center |
| ORD | Army Ordinance Department |
| PAPI | Precision Approach Path Indicator |
| RFP | Request for Proposal |
| SCAPE | Self Contained Atmospheric Protective Ensemble |
| SHPO | State Historic Preservation Officer |
| SSP | Space Shuttle Program |
| SSRT | Single Stage Rocket Technology |
| STA | Shuttle Training Aircraft |
| STS | Space Transportation System |
| TACAN | Tactical Air Navigation |
| TAL | Transoceanic Abort Landing |
| UHF | Ultrahigh Frequency |
| USAAF | United States Army Air Force |
| USAF | United States Air Force |
| VITT | Vehicle Integration Test Team |
| WPA | Works Progress Administration |
| WSMR | White Sands Missile Range |
| WSNM | White Sands National Monument |
| WSPG | White Sands Proving Ground |
| WSSH | White Sands Space Harbor |
| WSTF | White Sands Test Facility |

PART I. HISTORICAL INFORMATION

A. PHYSICAL HISTORY

1. DATE OF CONSTRUCTION

The TACAN Beacon Station was installed ca.1988.

2. ENGINEER

Not known.

3. BUILDER/CONTRACTOR/SUPPLIER

Not known.

4. ORIGINAL PLANS

Not available.

5. ALTERATIONS AND ADDITIONS

All electronic equipment was removed once the facility was vacated in 2011. The U.S. Army initiated occupation and reuse of the facility in the summer of 2012.

PART II. STRUCTURAL/DESIGN INFORMATION

A. GENERAL DESCRIPTION

1. CHARACTER

The TACAN Beacon Station is housed in a prefabricated steel portable trailer located northeast of the HUB Maintenance Facility along an access road leading to the WSMR "Chub" site at the edge of the sand dunes. Installed on a concrete pad around 1988, the exterior of the Basic-Hydro Pneumatic Trailer was covered with spray foam insulation. The trailer was manufactured by Douglas Aircraft Co., Inc., of Santa Monica, California, under contract to the U.S. Air Force.

The trailer housed the Tactical Air Navigation (TACAN) equipment. TACAN is a worldwide air traffic navigation system operated by the Department of Defense and used by civilian and military aircraft. The TACAN signal ranges to 300 nautical miles and was received by the orbiter when it emerged from the reentry blackout period. TACAN ground installations such as this, known as beacons, provided an L-band (1 gigahertz) signal that indicated the range and magnetic bearing angle from the TACAN antenna to the user. The facility was vacated in 2011.

2. CONDITION OF FABRIC

When documented in March 2012, the TACAN Beacon Station had been abandoned for over six months, but was in fair condition. The interior equipment had been removed and the exterior was showing signs of neglect due to the harsh desert environment, which requires that facilities are constantly maintained and repaired due to shifting sands, flash floods, and extreme temperature variations.

B. CONSTRUCTION

The TACAN Beacon Station is a prefabricated trailer on a concrete pad.

C. MECHANICAL/OPERATION

The TACAN Beacon Station featured electricity to power interior lights, electronic navigational equipment, and a wall-mounted air conditioning unit.

PART III. Sources of Information:

A. ENGINEERING PLANS AND DRAWINGS

There are no known engineering plans or drawings of the TACAN Beacon Station.

B. INTERVIEWS

The following NASA and WSMR employees were interviewed for this documentation.

Robert E. Mitchell, WSTF Manager, September 2011.

Frank Offutt, WSSH Manager, September 2011.

Timothy Davis, WSTF Historic Preservation Officer, September 2011 and March 2012.

Bill Godby, WSMR Historic Preservation Officer, September 2011.

Doyle Piland, WSMR Museum Archivist, September 2011.

Dennis G. Perrin, NASA Johnson Space Center, Houston, Texas, and WSTF Facility Manager (1975-1989), June 2013.

C. BIBLIOGRAPHY

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D. LIKELY SOURCES NOT YET INVESTIGATED

Research was conducted at WSSH and WSTF using primary and secondary sources. Sources that were not investigated that may contain secondary information are archived at NASA's Lyndon B. Johnson Space Center in Houston, Texas.

Additional oral history interviews with other engineers and technicians could also prove useful.

PART IV. PROJECT INFORMATION

In 2011-2012, New South Associates (NSA), under contract with InoMedic Health Applications, LLC (IHA) of Kennedy Space Center, Florida, and in coordination with NASA and the U.S. Army, conducted background research and a historic architecture survey of resources at the NASA WSSH. The survey included the documentation and evaluation for NRHP eligibility for seventy-two resources located in four distinct areas. Based on this research, NSA determined that no properties remain at WSSH from the period prior to NASA acquisition in 1963 except for the footprint of the packed gypsum Runway 17/35.¹

NSA recommended that the three NASA WSSH Runways and the Control Tower in Area 1 were individually eligible for listing in the NRHP and eligible as contributing resources to the "WSSH Shuttle Landing Facility District" under Criterion A and Criterion Consideration G for their association with the NASA SSP. None of the other sixty-eight inventoried properties were recommended individually eligible for listing in the NRHP due to lack of historical association with the NASA SSP or other historic contexts, lack of unique design or construction features, or insufficient integrity; however, nineteen of these properties, all of which lie within Area 1, were recommended as contributing resources to "WSSH Shuttle Landing Facility District," even though they were not recommended individually eligible for the NRHP. The historic district contains a total of twenty-eight resources: twenty-three are contributing and five are non-contributing.

After formally ending the SSP on August 31, 2011, NASA disposed of the WSSH and released use of the property to the U.S. Army WSMR. The property transfer was a federal undertaking on federally-owned property and subject to compliance with Section 106 of the NRHP Act of 1966, as amended. The undertaking resulted in an Adverse Effect to the NRHP-eligible WSSH Shuttle Landing Facility District. To mitigate the adverse effects, NASA

¹ Reed, Mary Beth, and Robbie D. Jones. "Historic Architecture Survey and National Register of Historic Places Evaluation of the NASA White Sands Space Harbor on the U.S. Army Whites Sands Missile Range, Doña Ana County, New Mexico." New South Associates, Stone Mountain, Georgia, 1998: 44-62. Unpublished report on file at NASA WSTF, Las Cruces, New Mexico.

completed HAER Level II documentation of the historic district and relocated the Control Tower to the WSMR Museum for conservation, exhibition, and public interpretation.

The mitigation plan was defined in a Memorandum of Agreement (MOA), executed between NASA, the U.S. Army, and the NM-SHPO in August 2012. The properties within the historic district were documented with large format photography in March 2012.

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APPENDIX- LOCATION MAPS

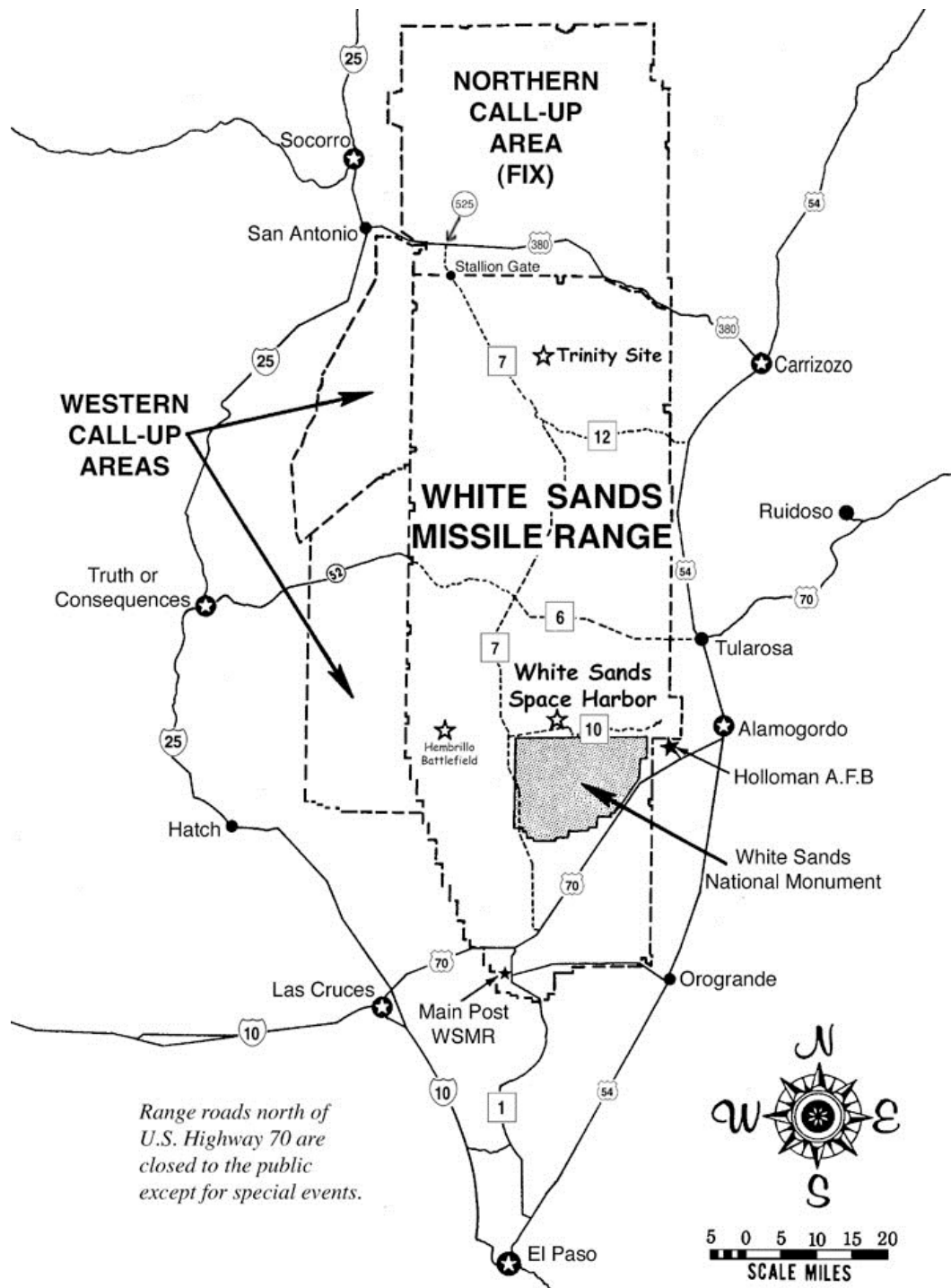


Figure 1. Map of White Sands Military Reservation showing White Sands Space Harbor (Source: U.S. Army).

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Figure 2. Map of WSSH showing location of the TACAN Beacon Station in Area 1, which delineates the NRHP boundaries of the WSSH Shuttle Landing Facility District (Base Map Source: NASA WSTF).

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access road
White Sands vicinity
Doña Ana County
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David Diener, Photographer March 27-29, 2012

NM-28-S-1 VIEW OF TACAN BEACON STATION, LOOKING SOUTHWEST
TOWARDS THE HUB COMPLEX AND SAN ANDRES MOUNTAIN RANGE.

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